

Amendment
Serial No. 09/806,091

Docket No. PHF99621
August 2004

IN THE CLAIMS:

Kindly replace the claims with the following:

1. (Original) A method for encoding video signals corresponding to a sequence of frames each of which originally consists of two fields F1 and F2, in which the encoding step is preceded by a preprocessing step which itself comprises the sub-steps of:
 - (A) receiving the successive frames and delaying each of them with a delay of at least two fields;
 - (B) adjusting said delay according to the following dominance change criterion:
 - (a) when a change from an F1 dominance to an F2 dominance is detected, the first field of the first F2 dominant frame is suppressed, said delay being therefore decreased by a quantity equal to "one field" duration;
 - (b) when a change from an F2 dominance to an F1 dominance is detected, the last field of the last F2 dominant frame is repeated, the delay being therefore increased by a quantity equal to "one field" duration.
2. (Currently Amended) [An encoding] The method according to claim 1, said sequence of frames being constituted either by film-type images, to which [the] a 3:2 pull-down technique has been applied, or by video-type images consisting of two fields, said method comprising the steps of:
 - (A) detecting that the current sequence is constituted by film-type images ;
 - (B) encoding said current sequence, either after said preprocessing step when it is not detected as being of film-type or after implementation, on said current sequence, of the inverse 3:2 pull-down technique if it is detected as being of film-type; and said detecting step comprising the sub-steps of:
 - (a) defining for two successive fields F(n) and F(n+2) of the same parity a number of pixels N2 such as $N2 = NTOT - N'2$, where NTOT is the number of pixels in a field, N'2 is the number of pixels for which $ABS(val F(n) - val F(n+2)) <$

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TH2, ABS designates the function "absolute value", val designates the luminance of a pixel, and TH2 is a first predefined threshold;

- (b) comparing the result of the subtraction of two consecutive numbers N2, divided by NTOT, to a second predefined threshold THR;
- (C) detecting that the current sequence is constituted by film-type images only when said result is lower than said second threshold, said fields being then considered as equal.

3. (Currently Amended) A device for encoding video signals corresponding to a sequence of frames each of which originally consists of two fields F1 and F2, said sequence being constituted either by film-type images, to which [the] a 3:2 pull-down technique has been applied, or by video-type images consisting of two fields, said device comprising :

- (A) means for detecting in the input sequence of frames a sequence of film-type images;
- (B) means for receiving the successive frames of the input sequence, delaying each of them with a delay of at least two fields, and adjusting said delay according to the following dominance change criterion:
 - (a) when a change from an F1 dominance to an F2 dominance is detected, the first field of the first F2 dominant frame is suppressed, said delay being therefore decreased by a quantity equal to "one field" duration ;
 - (b) when a change from an F2 dominance to an F1 dominance is detected, the last field of the last F2 dominant frame is repeated, the delay being therefore increased by a quantity equal to "one field" duration.
 - (c) means for encoding the input sequence of frames, either connected in series with means (B) when said sequence is not detected as being of film-type or after implementation of the inverse 3:2 pull-down technique if it is detected as being of film-type.

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4. (Currently Amended) [An encoding] The device according to claim 3, in which said detecting means comprise a set of subtractors, provided for receiving each one two successive fields of the same parity and determining per pixel the difference between these fields and followed by a set of circuits provided for taking the absolute value of said difference and storing it, computing in subtractors the successive differences between the successive values of these stored absolute values, comparing these differences to a predefined threshold, and detecting a sequence of film-type only when said difference is lower than a predefined threshold, said fields being then considered as equal.

5. (New) A system for pre-processing video signals corresponding to a sequence of frames each of which originally consists of two fields F1 and F2, prior to encoding, said system comprising:

a processor in communication with a memory, said processor executing code for:

(A) receiving said successive frames and delaying each of them with a delay of at least two fields;

(B) adjusting said delay according to the following dominance change criterion:

(a) when a change from an F1 dominance to an F2 dominance is detected, the first field of the first F2 dominant frame is suppressed, said delay being therefore decreased by a quantity equal to "one field" duration;

(b) when a change from an F2 dominance to an F1 dominance is detected, the last field of the last F2 dominant frame is repeated, the delay being therefore increased by a quantity equal to "one field" duration.

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6. (New) The system according to claim 5, wherein said sequence of frames being constituted either by film-type images, to which a 3:2 pull-down technique has been applied, or by video-type images consisting of two fields, wherein the processor further executing code for:

(A) detecting that the current sequence is constituted by film-type images;

(B) encoding said current sequence, either after said preprocessing step when it is not detected as being of film-type or after implementation, on said current sequence, of the inverse 3:2 pull-down technique if it is detected as being of film-type; and

(C) detecting that the current sequence is constituted by film-type images only when said result is lower than said second threshold, said fields being then considered as equal.

7. (New) The system according to claim 6, wherein the code for detecting in step (A) further comprises code for:

(a) defining for two successive fields $F(n)$ and $F(n+2)$ of the same parity a number of pixels $N2$ such as $N2 = NTOT - N'2$, where $NTOT$ is the number of pixels in a field, $N'2$ is the number of pixels for which $ABS(val F(n) - val F(n+2)) < TH2$, ABS designates the function "absolute value", val designates the luminance of a pixel, and $TH2$ is a first predefined threshold; and

(b) comparing the result of the subtraction of two consecutive numbers $N2$, divided by $NTOT$, to a second predefined threshold THR .